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THE FORESTS

By J. S. Whipple

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THE necessity for the conservation of our natural resources is unquestioned today. Twice the Governors of all the States have been called together by request of the President to consider ways and means of checking the waste of natural resources. Influential societies have been organized for the purpose of disseminating information as to the seriousness of the conservation question in this country. Speakers are about the land delivering from the public platform educational exhortations and prominent publications are urging careful use of our valuable public assets. All over the nation the cry has gone up that we must halt our onward rush to disaster, inevitable if we continue the course thus far pursued. We must turn back up the path of our debauch and rectify the mistakes made by the avarice and ignorance of our people.

The wealth of this nation has been wrung from its natural resources. The most important of these is the forests. This rich El Dorado we are plundering from the bosom of the earth without heed to the interest of future generations. This is a great nation; I sometimes think as great in its vices as in its virtues. It is difficult to determine just what per cent. of all our natural resources have been wasted through ignorant methods of utilization. Statistics prove that more than one-half has been lost. In the case of forests the percentage is still greater. And one wonders how much more preeminent we would have been if these invaluable possessions had been properly handled from the time our national career began. Here the thought obtrudes, what suffering have we imposed on following generations by destroying resources that belonged to them? What humility have we brought to the future prestige of the United States?

How much have we shortened our national life? What achievement, judging from our present high position as a factor among nations, would we have attained had we utilized the lost equivalent of our present prosperity? We have thrown away an American nation in making one. Our resources should be preserved and perpetuated, if possible, by wise handling; not wasted. The dissipation of one's health is like the dissipation of natural resources by the body politic, it leads to desuetude and disaster. It means commercial oblivion. It is civic suicide. During recent years the principle seems to have been "After us the deluge." We cannot proceed farther on that proposition without making ourselves unworthy of our ancestors and our posterity.

Man's ingenuity might devise substitutes for every natural asset now in process of exhaustion sooner than an equivalent for our munificent forests could be found. Nothing to take the place of forests has yet been discovered, although many countries have needed a *quid pro quo* for the ruthlessly destroyed trees, as they have needeh nothing else in their history.

Forests must always prevail, or we cannot. Forests had to precede tde

advent of man. The last man will be a sequel of the last tree. The ruins of abandoned cities mark the denuded lands of other countries. A nation bereft of its forests will lose its integrity among nations. Without a reasonable woods growth properly distributed, water will disappear from the land as it does from the roof of a building. Valuable wild animal and bird life must to a large degree perish. The product of fish life amounting to many million dollars would be materially reduced. Without water the productiveness of our farm land must greatly depreciate and might finally be lost altogether. Farms that need no irrigation now would become barren. The health of our cities would be jeopardized. Great manufacturing interests taking their power from the rivers of the State would be crippled and thousands of men thrown out of employment. The history of the world proves that such conditions invariably follow the denudation of forest areas.

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WHITE PINE PLANTATION 30 YEARS OLD.—SPACING OF TREES A LITTLE TOO WIDE. CLOSER SPACING WOULD REDUCE SIZE OF BRANCHES AND HASTEN NATURAL PRUNING.

Here in the United States we are absolutely wasting our timber. Only about thirty per cent. of the timber which stood in the forests is utilized after it is cut. We take from our forests each year, not counting the loss by fire, three times their yearly growth. We take thirty-six cubic feet per acre for every twelve cubic feet grown. We incite misuse of our forests by over-taxation and thereby award a premium on waste land. Taxes should be so adjusted as to encourage the planting and maintenance of forest land. You cannot expect a people at large to plant forests where future profit on the investment is so far distant that it seems almost intangible; especially when a heavy tax renders a return on the investment doubtful.

The world's supply of timber already has reached the point where we have to depend upon our own product for what we use. With the exception of some finishing woods we must grow our own supply or come pretty near going without.

In New York State we are cutting timber five times as fast as it is being reproduced. In twenty years we will not have a sawing stick left in the State. We know that this result is found to follow from a careful study made of the supply, reproduction and consumption of timber. The end is in sight. If we do not heed the warning we shall reap the whirlwind as France did and as China does. The Chinese Empire never recovered from the staggering blows dealt her by impecunious generations. The Chinese

today are hiring German foresters in an attempt to prevent the soil of their mountainous country, bared by deforestation, from eroding into the sea. The only way to do this is to cover the soil again with trees, just as Nature once covered and protected it. It takes from fifty to one hundred years to grow a tree but when the soil is gone it may come back in a thousand years or never.

Without forests we can have no wood. Lumber has doubled in price in a decade. The scarcity of wood takes money from the pocket of every human being. Without forests, especially in a country like the State of New York, we can have but little water. Before our woodlands were so badly cut, we did not need storage dams. God, in his wonderful plan in creating the world and providing it with forests, planned for, and nature built, a reservoir never surpassed in usefulness.

A study of this natural reservoir proves the importance and imperative necessity of preserving our forests. The trees, the leaves, the twigs, old logs, limbs and fallen debris are part of it. All these catch, delay and hold back the rain drops as they fall. If you will observe the conditions of the forest floor you will notice that between the trees there are little basins in the ground, caused by the roots of the trees holding up the soil. These basins catch and hold the rain. Then underneath it all, formed from decaying leaves, twigs, limbs and logs for a thousand years, is a black mold called humus. This humus has greater power to take up and hold moisture than any other known vegetable or animal matter. The humus is the principal component part of God's reservoir. Then the leaves, limbs, trees, the dead and decaying debris upon the ground, the little hollows or basins between the trees and this humus are all parts of this perfect reservoir, built on nature's plan, detaining, holding and keeping back the water, allowing it to soak into the ground to feed the little springs, thence the creeks, and keep the water flowing from the hills all the year round.

On the other hand when the forest is cut away, the basins are broken down, all obstructions to the flow of water are removed, the humus is destroyed and Nature's reservoir is swept away, allowing the water to run quickly into the larger streams, causing destructive floods. Many times, great damage and unhealthful conditions follow. When the storm is over, the flood subsides, the water is soon gone, and dry creek beds appear.

[Reproduced by permission of the Forest Service, United States Department of Agriculture.

A WELL ARRANGED WOOD LOT, SHOWING CLEAN TIMBERS RESULTING FROM NATURAL PRUNING.

Nearly every person can remember some stream close to his boyhood home, covered and protected by beautiful trees, its water supporting fish life and running nearly full banks all summer long. Since then the forests on the watershed have been removed, and now when he visits his old home the well-remembered swimming pool is dry, the trout brook is a dry creek bed, and the forests, which kept the cool water constantly running from the old hills are a thing of the past. These evidences are to be seen on every hand all over the State.

The Mohawk last August was a rivulet with ugly mud bars sticking out all along its winding course. The same conditions prevailed in the upper Hudson. That river had not more than two inches of water where once it flowed deep and strong the year round. The water last August in Lakes George and Champlain was a foot to a foot and a half lower than ever before.

Why this condition? Why reservoir agitation? The reason is plain: the old hills are uncovered; the valleys are bereft of their protecting forests; God's reservoir under the trees has been destroyed. Therefore, without forests, we cannot have water except in flood time. Without forests there is no home or breeding place for birds or game animals; without cool and constantly supplied water we can have no fresh water fish life and much of that valuable product must be destroyed. Without permanent forests we cannot have lumber.

You will remember that there are not more than four rivers of importance in the State, which have their source in the State, that do not rise in the Adirondack and Catskill regions. Therefore, these particular sections of the State should always be covered with a good forest.

While we are trying to preserve our woodlands and thereby the water of the State which they protect, we must not forget that quantity of water alone is not all that is required in this respect. The water should be pure. Polluted and impure water is constant menace to the health of people and all animal life that drinks it. There are in the State of New York 6,000 manufacturing plants of every kind and description, all pouring the refuse, much of it poisonous and dangerous to health,into the streams and ponds and lakes near which the establishments are located. The sewage from a thousand cities and villages, and the refuse of all kinds coming from these places is run into and thrown into the creeks, rivers, ponds and lakes of the State, polluting and defiling the water, making it unfit for domestic purposes. It is almost criminal negligence on the part of all persons having the power to in any way better the present condition not to move in the direction of purification of the water supply of the State.

Then, too, we must have forests because they regulate the temperature, affect rainfall and protect from winds. In these respects the value of the forest to agricultural lands is very apparent and important. Forests are very important regulators and equalizers of the temperature. Slight observation will convince a person, who will take the pains to examine this question, that large forests or a large number of small forests, to a considerable degree lower the temperature in the heated term and raise it in the winter. If you will test the temperature of a tree in the forest when the thermometer anywhere in the vicinity of the tree registers ninety-five degrees in July, and the test be applied to the tree three feet from the ground, you will find the temperature of the tree body to be at least five degrees lower than that of the temperature about it. The reason for it is plain:

The tree in a way has a circulation like that in a human body. The tree gathers its sustenance from the cool ground, draws the moisture into the body of the tree, it circulates by capillary attraction through its whole length to its branches, and is evaporated largely from the under side of the leaves. The tree constantly throw off moisture as well as large quantitie of oxygen. This circulation lower

the temperature of the body of the tree. When thousands of trees stand close together on a tract of land it must decrease the temperature of the air not only in close proximity to the forest but far removed therefrom.

Then, too, the thick covering which the leaves in summer afford to the ground, scarcely allowing the sunlight to penetrate to the forest floor, prevents rapid evaporation, excludes the heat, and in that way, materially lowers the temperature in and about the forest. The moisture being retained in the ground more steadily and longer, helps to keep the ground cool and to cool the air that circulates above. This is, undoubtedly, largely the cause of much lower temperature in the Adirondacks than we have in the cities of the Middle, Southern and Western part of the State. If anyone imagines that the reason for a twenty-five degree lower temperature on the average at Lake Placid in summer is due to the fact that it is a hundred or even two hundred miles north of a given point in the State and that alone is the reason, they are very much mistaken.

Forests sensibly affect the rainfall of a locality. Moisture is being thrown off constantly through the leaves; the air about the woods is much cooler than far away from them; the higher elevations loom up cool in the atmosphere. The hot winds charged with moisture are blown across the cool ridges; the moisture is condensed as it comes in contact with them and is precipitated in rain.

Space will not permit going further into the subject in its thousand important phases. But the immediate increase of forest lands on a large scale is vitally urgent in this State. The

ROAD TO A LUMBER CAMP.

only lines to work along to prevent what has occurred in other countries from occurring more is to plant trees; to promulgate stricter laws governing the manner of cutting timber; to hold out some inducement to the private owner for reforesting his waste land by lifting the tax burden, to some extent, from his property; and last but not least important is the protection of the forests from their greatest enemy, fire.

If these things are done they will conserve our streams as well as our forests. If they are not done, the usefulness of our streams will decrease no less than the usefulness of our forests. Game and bird-life will vanish from the land and we will loose the great beautiful gardens of recreation that thousands delight to visit for health and recuperation, the value of our property will decrease while the cost of living will materially increase and history will have repeated itself.

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THE PROTECTION OF FISHERIES

THE INTERNATIONAL FISHERIES COMMISSION AND THE PROTECTION OF FISHERIES

David Starr Jordan

President Leland Stanford University.

THE International Fisheries Commission represents a most interesting effort to settle at once a number of problems in International Law, in Constitutional Law, in Conflict of Laws, in Equity, and at the same time in Biology, for no statute for the preservation and propagation of fish can be effective unless the nature of the individual species, its food, its distribution and its habits, is primarily and persistently kept in view.

The boundary waters of the United States and Canada include two of the greatest fishing areas of the world. The Great Lakes constitute the greatest body of freshwater belonging to any single system, and it is richer in fish life than any other. Puget Sound and the adjacent waters are part of the great Alaskan system, the region of all the world richest in salmon.

In these boundary waters the statutes of the Dominion of Canada, those of the different provinces and those of the different states of the American Union are more or less at cross purpose with each other. Over Lake Erie, for example, the richest of the lakes in fisheries, four states and one province claim jurisdiction, with the greatest variation in theory and practice of fish protection.

In the treaty of April 11, 1908, an attempt is made to remedy this condition of affairs by the adoption by Great Britain and the United States of identical statutes relating to the fisheries, these statutes to hold for a period of four years without change, except by the joint action of both nations. Under this treaty two commissioners have been appointed to draw up this code of fishery statutes. These are the Hon. Edward E. Prince of Ottawa as representative of Great Britain and the present writer as the representative of the United States.

The code of regulations, adopted on May 30, 1909, will become law, when promulgated jointly by the President of the United States and the Premier of Canada.

This treaty involves a number of interesting principles. (1) Joint international actions in the case of migratory animals moving from waters of one nation to those of another in place of national control on the two sides of the boundary. (2) Substitution of international legislation in this regard for that of the several provinces, states and counties. (3) The code of regulations must depend on the nature of the different species of animals it is designed to protect, the matter becoming, at bottom, one of natural history.

In nearly all cases the final key to the situation is found in artificial propagation—the development of the hatchery. This demands, however, men who are willing to study their business and to learn through the nature of the fishes concerned, the egg, the fry, and the adult. Artificial hatching is not a process. It is an art, and like all arts it must rest on science. How much of the money spent on hatcheries has been wholly wasted no one can tell, but the amount is considerable. And the value of any hatchery is determined, not by the nominal output of eggs and fry, but by the brains put into the business. Each species of fish, like each plant in the garden, has its own nature and must be met on its own ground. It is set in its ways, and will not conform to the habits of any other species.

The species of fishes affected by this legislation are numerous, but they can be grouped into about six types, as represented by the herring, the whitefish, the red salmon of the Pacific, the black bass, the wall-eye, and the sturgeon.

The herring is a marine fish existing in incalculable numbers and spawning by the million in many places on both

shores of the North Atlantic. The catch of herring in navigable waters is less than a drop in the bucket, and the fishery statutes must concern the protection and regulation of the fishing industry rather than the conservation of the herring itself.

The whitefish is a type of a group of fishes, part of them the helpless prey of the predatory fishes, others as the Lake Trout feeding freely on other forms, but all spawning in cooling water, mostly in November. The eggs are large, free and easily manipulated, so that they can be easily cared for by processes of artificial propagation. By caring for these eggs perhaps twenty or even a hundred times as many young can be returned to the lake as would naturally develop. The best protection to such fishes is that of a size limit, forbidding the buying or selling of all which have not reached the degree of maturity involved in the second appearance on the spawning grounds. These fishes are fit for the table while the spawning process is going on. To forego catching them for a month or so before the spawning period, then to allow free fishing for adult fish on the part of those fishermen prepared to preserve the spawn is the best means of maintaining and increasing fisheries of this type. The theory is that the grown fishes once spawned may be removed leaving more room for the new generation, much as the ripe trees may be taken from a forest. In this regard we already see every prospect of success in the Great Lakes, as even under present conditions, with the present hatchery facilities, the number of fishes of this kind is steadily increasing.

To another category belongs the five species of salmon of the Pacific Coast, the Chinook, the Red Salmon, the Silver Salmon, the Humpback and the Dog Salmon. All of these feed in the sea, spawn in the rivers, ascending the streams for the most part when four years old, all individuals male and female dying soon after the first spawning. In this case the fish are valuable only when about to leave the sea, or in the lower courses of the rivers. When the spawn or milt is ripe the flesh of the fish is worthless.

Here the problem is to allow fish enough to escape the nets and to ascend the rivers to cover the spawning grounds and to keep the hatcheries occupied. The most valuable of these species, in international waters, the red salmon, spawns only in streams at the head of lakes. In Puget Sound the supply has been greatly depleted by over-fishing.

Under such circumstances nothing is gained by statutes regulating the size of fish. The only thing to be done is to establish seasonal or weekly close seasons, when a certain large number shall have opportunity to pass up to the lakes.

The black bass is the type of still another group of fishes. The male bass maintains his own hatchery. The eggs cannot be separated and hached by artificial means. The male fish builds a nest, the eggs are placed in it. Then he stands guard over them, driving away all intruders including the mother bass, until the hatching is complete. Then he eats some of his own young, let us hope the least active, as a contribution to natural selection, and the rest escape. No artificial improvement over his method is possible. In this case protection consists in preventing the catching of the immature fish, and the absolute preservation of the spawning grounds from intrusion of net or hook.

Another class contains predatory fish like the wall-eye and perch, spawn ing in spring, in warming waters but susceptible of assistance through artificial hatching. In general, these are adequately protected by the law of the size limit, by which the immature fishes are kept from the markets. Sometimes, however, nets must be kept out of the line of their spring migrations.

Still another class is composed of the sturgeon, of which four species are found in international waters. It reaches a great size, and when running to its spawning beds in the spring, it is an easy victim to the pot hunter.

The vast majority of the sturgeons in our lakes have been killed for the eggs which are made into Caviar. The sturgeon thus far has resisted the attempts at artificial propagation, by reason of certain peculiarities of its own. When the fish is ripe the eggs and milt are unripe and die without maturing if the fish is confined in a pond.

With these species, there is but one method of artificial increase—to prevent all killing for a series of years corresponding to the years of merciless and unlimited slaughter.

To protect for their greatest usefulness the varying groups of fishes, in all the lakes, rivers and seas of our northern boundary, is the task of the International Fisheries Commission. In so far as this commission is successful, it should extend the fisheries, increase the amount of available fish food, and bring about a more harmonious relation between the United States and Canada. Furthermore, it should improve the lot of each individual fisherman. If the work is successful it should furnish models for the statutes of the different states and provinces which have like problems and like interests.

If this international project is carried out satisfactorily, the same remedy should be applied to the difficulties arising from the migration of fishes in interstate waters. The conditions are the same in Lake Michigan, controlled by the variant statutes of four states as in Lake Erie with her five states and provinces.

The problem of the Columbia with its magnificent fisheries at the mercy of the inadequate, greedy and variant states of Oregon, Washington and Idaho, is far more difficult and more hopeless than that of the Frazer River and Puget Sound.

Twenty-eight years ago in my report on the salmon fisheries of the Columbia I called attention to the fact that these fisheries would be depleted or destroyed unless the government of the United States could intervene between Oregon and Washington. In each state fishermen try to take all they can get and the two legislatures can never agree on joint action of any kind adequate for the protection of the species.

This has gone on from bad to worse until the Columbia fisheries are but a fraction of what they were in 1880. At the present time under the referendum laws of Oregon, all fishing above tide water is forbidden in Oregon, and all gill net fishing by night below tide water limit is also prohibited. This practically closes all fishing on the Oregon side, while on the Washington side and up the river in Idaho, there is no limit of any kind. These statutes may be set aside by the courts, one or both of them, but meanwhile very few fishes reach the spawning grounds, and the fisheries four years hence will amount to nothing. All this comes from a struggle, carried into politics, between the Associated (gill net) fishermen on the one hand, and the owners of the fish wheels up the river, on the other.

The fisheries in the other boundary waters, Lake Michigan, the Mississippi the Ohio, and the Potomac are all in similar bad way. For this there is no remedy except for the United States to take control of all migratory animals of commercial value and to control and legislate for the interstate fisheries as it does for the interstate commerce, and for the interstate weather. Matters of importance which no particular state can manage must be taken in hand by the United States. Problems which see-sawing legislatures find insoluble are easy enough to a national commission. In this case the machinery for investigation and control, (and all control must be based on scientific investigation) already exists in the United States Bureau of Fisheries.

A FOREST SCHOOL IN WINTER QUARTERS

By Howard R. Krinbill

Student in the Biltmore Forest School, at present located at Darmstadt, Germany

AMONG the forestry schools of the world, the Biltmore Forest School, now in winter quarters at Darmstadt, Germany, occupies the unique position of being the only travelling school, having working fields during twelve months of each year in Germany (Winter), western North Carolina (Spring), Tennessee (Summer), and Wisconsin (Fall). The home of the School is the forest—the forests of the Lake States; the forests of the Southern Appalachians, the Middle Atlantic States, the North Woods of Maine, and the forests of Germany, particularly the Pineries of the Rhine Valley, the Spessart mountains, the Odenwald and the Black Forest.

Darmstadt is surrounded by various types of forest belonging to state, town and private individuals, each requiring a different method of management. To the west and south, spreads the Rhine Valley with its pineries and coppice growth in inundation regions; to the southeast rises the heavily-wooded, mountain district of the Odenwald, twenty-five miles in breadth, with stands of Oak and Beech; to the east, beyond the Main, stand the Spessart mountains, famous for primeval oak of highest quality; farther to the south, within two or three hours ride, stretches the Schwarwald or Black Forest, known to the forester for its Spruce and Silver Fir and to the world for its legends and songs, streams and cascades, old castles and ruined monasteries.

Near Darmstadt on a baronial estate may be seen the world's oldest forest plantations of American trees. Many other plantations exist, notably of White Pine, Jack Pine, Douglas Fir, Sitka Spruce, White Fir, Black Walnut, Red Oak and White Ash, mixed with native Beech, Oak, Maple, Ash and Birch. Through the famous foresters Hartig, Hundeshagen and Heyer, Darmstadt became the "historic birthplace of forestry."

The natural working field for the study of lumbering is in the Southern Appalachians and the Lake States of the United States, but for the study of Sylviculture, Forest Management, Mensuration and Botany, the best opportunities are offered in Central Germany. Dr. C. A. Schenck, Director of the Biltmore Forest School, has been able to secure unusual advantages at Darmstadt, the capital of the grand duchy of Hesse Darmstadt where since 1906 he has held the honorary rank of "Oberforester." The Polytechnic School with 1500 German students has opened its doors to the fifty Americans, affording botanical studies under the great botanist, Dr. Heinrich Schenck, who controls a large botanical garden containing species from many climes, North America (with Mexico) being well represented.

Sundays, the Americans have the privilege of attending Divine Services in English at the chapel in the Grand Duke's castle. The Grand Duke of Hesse Darmstadt offered the Biltmore boys the use of lecture rooms in the castle, a structure begun in the 15th century, containing a library of 470,000 volumes and a tower with chimes. This splendid offer could not be accepted, however, as Mr. G. Merck of Darmstadt and East Orange, N. J., had placed his villa at the disposal of the school.

Each morning at 8:30 the Americans assemble at the Merck villa for four hours of lectures—Conversational German, Sylviculture, Classification and Distribution of the Forest Trees of the United States. Between lectures, the students inspect the numerous American and European trees growing in a botanical garden connected with the estate. This garden is being used for experimental nurseries. Seeds collected in the mountains of western North Carolina have been planted, each student having a numbered plot.

A LOG JAM.

After noons, the prospective foresters become familiar with practical work by visiting saw mills, lumber yards, veneer and furniture factories. Sylvicultural lectures of the morning are supplemented by afternoon excursions to nurseries and plantations. Timber Estimating and Mensuration occur in the forests of Oak, Beech, Pine, Spruce and Larch. Accurate data are secured on age, number of specimens per acre, size of average tree, sectional area per acre, height, form, cords per acre, board feet per acre, and valuation. Forests of any desired description may be studied from the seedlings of 1909 to trees planted in 1780. For example, the successive stages of Scotch Pine are followed from the plantation of two year olds 16,000 per acre, culminating in 100 year old stands of 160 specimens per acre, average diameter at breast height, 13 inches, yielding 12,000 bd. ft. valued at $25 per 1000 and 25 cords of fire wood worth $8 per cord. The intermediate thinnings are studied by co-operation with the wood cutters, the trees being calipered ahead of the cutters so that a form height factor may be secured for total yield in cordwood, root wood and faggots. In the State forests of Hesse Dormstadt the thinnings yield 64 per cent and the final clear cut 36 per cent of the total revenue.

Conservative forestry is practiced in Germany, because the consumer pays the bill. Thinnings are profitable on account of the proximity of markets due to density of population and network of woods roads. The high value of naked soil unfit for the plow, the proper adjustment of taxes to the productiveness of the soil, the reduction of fire risk by an army of guards, and the high stumpage prices unite to foster Constructive forestry. The sustained yield of the forest is adjusted to the needs of the home market, thereby killing competition which would be detrimental to Conservation.

The long time investments involved are in keeping with the policy of a community, although generally impossible for the individual.

The total forest area of Germany (35 million acres), gives a per capita of less than six-tenths acre, which supplies about three-fourths of the consumption of sixty million people. The United States with a population of eighty-eight million has a forest area of nearly six hundred million acres or about seven acres per capita. The area controlled by the United States Forest Service equals five (4.8) times the total forest area of Germany. The demands of 200 million Germans could be supplied if German forestry were applied to the one hundred sixty-eight million acres of the American National Forests. Twenty-six per cent of Germany is forest area, classified as follows:

State and Crown forests	33.7%
Private forests	46.5%
Communal forests	16.1%
Church, school and hospital forests	1.5%
Association forests	2.2%

In the state of Hesse Darmstadt, the forests cover 32% of the area (fifty-five one hundredths acre per capita), 29% being state and Crown, 37% Communal, and 33% Private. In Hesse Darmstadt, Baden, Alsace-Lorraine and other small states, the communal forests are most highly developed.

The German states manage or dictate the working plans for the majority of the communal forests and control 30% of the private forests, mainly the protective forests of southern and central Germany. Only 33% of the entire forest area is entirely free from state control (70% of the private forests, including all those of Prussia and Saxony). The states own 33% and control 66% of the forests.

The forests of the United States represent 30% of the land area of which the National Forests comprise more than one-fourth. While Constructive and Conservative forestry form the policy of the Forest Service, Destructive forestry must be practiced by the American lumberman as long as vast areas of merchantable timber enable him to shift his capital from tract to tract after clear cutting. "Forestry is business; the best business is that forestry which pays best." The lumberman wastes timber to save money. The consumer wishes him to waste money to save timber. The lower grades of lumber left in the woods to rot will be marketed only when the consumer is willing to pay the cost of production and transportation. The utilization of tree tops and roots in the United States may be expected when the forest area per capita approaches one acre instead of seven. No lumberman in the United States has confidence enough in second growth to risk his capital against first and over taxation. Only the government, national or state, can afford to be blind to the compound interest tables. "Conservative forestry is incompatible with low prices and high taxes, hot fires and cold logic," high freight rates and a low tariff on low grades.

The highly developed German forestry system cannot be applied to the American forests, because similar economic conditions do not prevail. The students of the Biltmore Forest School are in Germany to study the conditions which make Conservative forestry profitable—more profitable than Destructive forestry. Returning to the United States, they will not try to introduce any innovations but will be content to start at the bottom in the employ of large lumber companies.

The Americans have been welcomed to German soil by royalty, townspeople, soldiers and students, and they in return will endeavor to strengthen the feelings of good will and common interest already existing between the Fatherland and Young America.

THE AGRICULTURAL SITUATION

By L. H. Bailey

Extract from an address delivered January 21st before the Students of the New York State College of Agriculture

THE interest in rural affairs is now growing rapidly. This is the beginning of a movement that is bound to be world-wide and to have permanent results. All human affairs tend to develop irregularly, or in parts, the public interest first attaching itself to one phase and then to another. The final result, however, is the coordinated progress of the race.

One hundred years ago all peoples were essentially rural. With the expanding of manufacturing, commercial and transportation interests, attention has been directed to the upbuilding of trading places or cities, and the chief attention of the race has been directed for two or three generations toward this phase of our evolution. The result is that rural civilization has been relatively overlooked and neglected. It is the unexpressed recognition of this fact that lies at the bottom of the present movement for country life. It is a process of the evening-up of our civilization. As we measure cvilization in these latter days, it cannot reach its highest perfection if it is preponderatingly rural; neither can it reach its highest efficiency if it is preponderatingly urban. The movement for the betterment of country life, while it may over-express itself, is nevertheless fundamental. The special interest in it is likely to continue for a generation or more, until the processes are measurably coordinated.

The fundamental problem for the human race is to feed itself. It has been a relatively easy matter to provide food and clothing thus far, because the earth yet has a small population, and because there have always been new lands to be brought into requisition. The races propagate in geometrical proportion. We shall eliminate the plagues, and the devastations of war, and the population of the earth will tremendously increase in the centuries to come. When the new lands have all been opened to cultivation and when thousands of millions of human beings occupy the earth, the demand for food will constitute a problem which we scarcely apprehend today. All this supply must come from the thin crust of the globe. We shall then be obliged to develop self-sustaining methods of maintaining the producing power of land. We shall eliminate all wastes, and every human being will develop a consciousness of care for the resources of the earth.

We think we have developed intensive and perfected systems of agriculture; but as a matter of fact, and speaking broadly, a permanent agriculture is yet unknown in the world. In certain regions, as in Great Britain, the producing-power of the land has been increased over a long series of years, but this has been accomplished by the transportation of fertilizing materials from the ends of the earth. The fertility of England has been drawn largely from the prairies and plains of America, from which it has secured its food supplies, from the guano deposits in islands of the seas, from the bones of men in Egypt and the battlefields of Europe. We begin to understand how it is possible to maintain the producing-power of the surface of the earth, and there are certain regions in which our knowledge has been put effectively into operation but we have developed no conscious plan or system in a large way for securing this great result. It is the ultimate problem of the race, as I have indicated, to devise a permanent system of agriculture. It is the greatest unsolved problem that can confront us. These statements will give you some sense, I hope, of the importance of the affairs that you and we, as students, are now studying.

The speaker explained the importance of the meeting just completed at Albany, called under the auspices of the old State Agricultural Society. This meeting resolved itself practically into a "conference of rural progress," such as was recommended by the Commission on Country Life. It will have a powerful effect in directing public sentiment in the Empire State and in solidifying what information we now possess. Such conferences are being held in other states. It cannot be long distant when great national conferences on country life will be held, and when we shall have even world-wide convocations of similar character in order to converge and crystallize the sentiment of the world. The ultimate means of securing the brotherhood of mankind is to come through the discussion of the primary fundamental problem of mankind, which problem is the providing of the means of subsistence.

THE STATE PLAN

There was suggested at Albany the outline of a state plan which should bring together and coordinate all movements for education by means of agriculture, with the idea that it would be the beginning of a systematized movement for the advancement of rural civilization in general. A committee was established to consider these and other recommendations during the coming year, and it will study the situation, develop a plan and, if it seems to be wise, propose a law that shall outline a general plan of action. The suggestions that brought up this discussion are as follows:

"We must have a state program for the development of country life. Without such a program we shall be in danger of falling into disorder. We will overlap, lack vision, probably work at cross-purposes, and fail miserably to accomplish the best and the broadest results. I propose that a general law be enacted which shall define the state's policy in education by means of agriculture, and which shall outline methods that it proposes to follow so that the work may be, coordinated throughout the state and that a definite plan may be projected. The duties of all the classes of institutions should be defined and relations should be established between them. The people should know to what they are committing themselves.

"This law should not, of course, be designed to suppress the activities of any institution or to put such institution under the domination of any other institution. The schools, colleges and other institutions for the betterment of agriculture should have their own autonomy and responsibility and they should be developed to the highest point of efficiency in their respective spheres. Nevertheless their functions need to be defined and the work of all of them coordinated. A general plan whereby all this may be worked out should be stated in a separate law that is devoid of all local, sectional and special questions.

"The fundamental consideration in such a law should be to develop the agriculture and advance the country life of the state by organizing the work of all the agencies on a systematic plan so that an orderly development may be secured. Such a recognized general policy should do much to insure to each institution in the system its proper state support.

"The germ of such a statute already exists in the agricultural law of the state. This phase of the law is now antiquated and needs re-statement and extension.

"Now that special schools of agriculture are established and others are being requested, as all institutions are expanding greatly, and as there is more or less confusion of ideas, it is imperative that the state should now outline as definite a policy as the best wisdom and experience in the state is able to project.

"Some of the points which I think should be made in such a law are these:

"1. The state should define its policy in the development of country life.

"2. It should name the classes of institutions that it proposes to utilize in the execution of this policy.

"3. It should define the functions of the different classes of institutions.

"4. It should state the organic relationships that should exist between them all.

"5. It might provide an advisory board or coordinating executive body to guide agricultural education in the state. I think that the directors or responsible heads of such institutions established for the betterment of agriculture throughout the state should constitute such advisory board, to which questions of policy and procedure should be referred and which, of course, should serve without remuneration. This board should include also the commissioner of agriculture and the commissioner of education. It might be well to have one, two or three other persons appointed by the governor. This board would constitute a natural conference of the parties that are immediately responsible for this work, just such as now exists more or less informally between the heads of these institutions. The idea of such a board is to further the coordination and to be directive, rather than to have plenary power."

SUGGESTIONS TO STUDENTS

Dean Bailey then made some suggestions to the students respecting their attitude toward their work. He thinks that education by means of agriculture is making a very important contribution to education in general. At a time when there is a tendency to refine and over-theorize our educational processes, it is very important that we keep our processes close to the ground and that we deal primarily with realities. It is not desired that we slacken the emphasis on ideals but that the ideals shall be developed from the real as a base. Education by means of agriculture rests on actualities. Its primary process is to meet the needs of the people and to develop them natively. It fits them for their livelihood, whereas much of our education tends to unfit them for securing a livelihood. It is also democratic to the highest degree. The extension work in agriculture, while yet very imperfect in its method is nevertheless the best expression of the modern extension movement because it designs to reach the last man and woman at their own homes and in their own business, and to extend their resourcefulness in life rather than merely to entertain or inform them.

The sincerity of purpose in this College of Agriculture is very marked and constitutes the underlying reason for its contagious spirit. As education becomes popular, certain youths frequent the institutions because it is "the thing" to do. With no particular purpose or goal they form a sort of caste or eddy in the student body, assuming the faddish swagger, affecting the cut of clothes, herding like sheep, and developing a superficial and supercilious air that is incompatible with the development of strong individualism and with effective work in the world. It is true that many students of this type become useful citizens, but this is not because of their social attitude while in the college but rather in spite of it. When students begin to come to the colleges of agriculture because it is fashionable, our educational problems will have become acute.

THE YOUNG FARMER

All hope for country life rests, of course, on the ability of the coming generations to secure a satisfactory living from the land. We have passed through many years of repression of agricultural interests, when it has been impossible for persons to make a satisfying living from the land unless they were placed in very exceptional circumstances. The time is now beginning to come, however, when persons of good ability can make a profitable business on the land. This does not mean that all lands can produce these results, for there are many areas that should never be farmed, in the ordinary meaning of the word. As rapidly as it is found that good men cannot produce a good living from certain areas, those areas should be devoted to other purposes. It is a wrong economic philosophy that all

land must necessarily be devoted to the usual farming operations. I am convinced that there are great areas of hill lands in New York that ought not to be "farmed." They should be owned by towns and counties and devoted to the production of timber. No doubt many of the counties in the State could grow forests which would eventually pay the taxes and provide the improvements in the counties.

Farms are now beginning to pay and the movement has only begun. It is desirable not so much that some persons shall make more profit as that more persons shall make some profit. The outlook of the young man from the farm was expressed in the following form:

He shall go out to the far green hills
And he shall go out to the plains,
He shall go out where the north wind chills
And he shall go forth in the rains.

He shall go out to the desert reach
Where the dead winds gather the sands,
He shall go on where the waters breach
Far down in their weltering lands.

He shall go forth in the winter's rage
And away in the tropic fire,
And there he shall stand; nor fame nor wage
Shall defeat him of his desire.

For he shall build on the good stout earth
That he takes from the hand of God,
And grip his place with a free man's girth
Till he strike his fires from the clod.

No nature-doubts shall haunt him to fear,
Storm and calm shall he walk with her
Together joined in their labors clear
Where elemental pulses stir.

Altars shall rise on the land he smites
Visions turn with his good plow-beam,
For steadfastly on through days and th' nights
There shall rest on his face the Dream.

PRUNING AND TRAINING THE YOUNG APPLE TREE

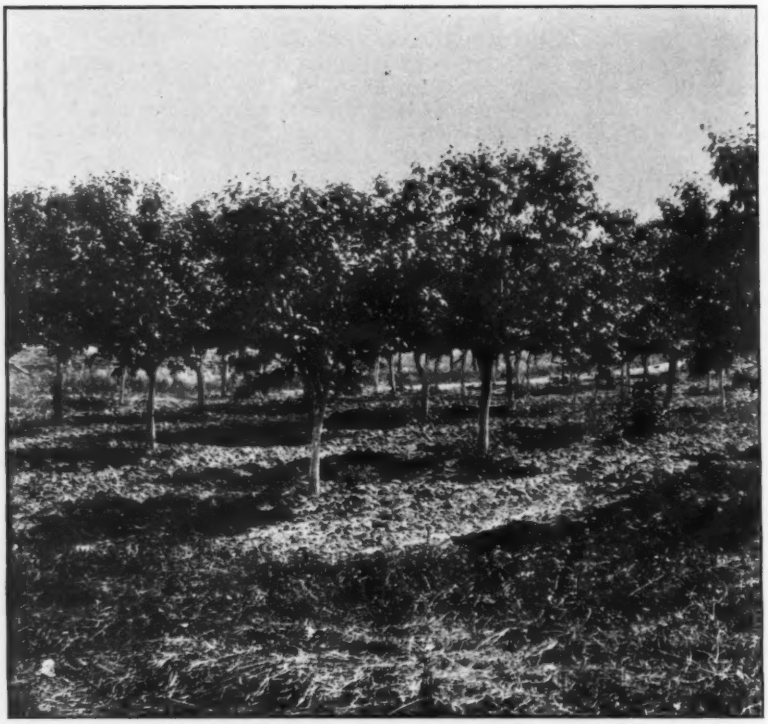
By W. H. Wicks

Institute Worker, Idaho Agricultural College

PRUNING is a broad subject and is one of the most important factors in the production of choice fruit. It is little understood by most people, yet all quite realize that it is necessary. It is said to assist nature and must be done for some special purpose.

There can be no definite rules given for pruning. Each tree presents an individual problem which must be solved by the best judgment of the orchardist. Intelligent, light and regular pruning forms probably the only good general guide. The reasons for pruning are many, but some of the most important are mentioned as follows; to form the tree according to the growers ideal, to secure a good strong frame work, to promote growth or retard it, to produce fruit, to remove crowding, diseased or broken limbs, and to form a tree which is capable of producing the best possible fruit.

Before Planting.—An equilibrium between the top and root should be established, and this is best done at



LOW HEADED TREES.—RESULT OF PROPER PRUNING.
[Courtesy of Horticultural Department.]

planting time. When trees are moved, more or less of the roots are lost and a pruning of the top is necessary to secure the correct relation. The root system should receive special attention at this time. Some practice cutting the top back before planting but this is not of prime importance.

An ideal necessary.—Before we prune, an ideal must be clearly in mind. The grower must decide if he wants an open center, central leader, high or low headed tree. The open center is obtained by removing the central leader and the advocates of this method claim a more equal distribution of air and light. This causes the fruit on the inside to color better and also tends to prevent fungus growth. This system is unnatural and expensive. Some western orchards prove this to be a poor method when compared with the central leader. The desired results can be obtained in a central leader tree if proper pruning is given. Some people still prefer the high headed tree but it is gratifying to learn that they are in the minority. The main point upon which the advocates of the high headed tree base their argument, is the supposed fact that it allows better and easier cultivation. The result is a very tall trunk with a bunch of limbs at the top. Such a tree is practically valueless. It stands as a token of poor training and a recommendation for low headed trees.

The choosing of low or high headed trees generally decides the profit or

loss to the grower. The low headed tree is much more easily pruned, sprayed, thinned and picked. Also lessens the danger from sunscald, windfalls, and can be cultivated better and much easier than the high headed trees. This means money saved. It must be clearly understood that pruning is necessary to aid the low headed tree to grow properly, that is, the scaffold limbs should make a strong, sturdy growth and never be allowed to droop. If so they become very undesirable. When the merits of the high and low headed tree are compared, it is not difficult to understand why the latter is strongly recommended.

First Year.—Fall set trees need not be pruned until spring. Spring planted trees should be immediately pruned. It should be borne in mind that pruning while the tree is still dormant encourages wood growth which, of course, is desirable in young trees. The one year old tree, which is about the size of a buggy whip, should be cut off from thirty-six to forty inches from the soil. This cut should be from ¼ to ½ inch above a good bud. Do not injure the bud or leave an undesirable stub.

Second year.—Four or five well placed limbs should be selected to form the frame work of the tree. These limbs are frequently termed "Scaffold Limbs." All others should be removed. The first limb should be started about eighteen inches from the soil and the others allowed to issue in a whorl from five to eight inches apart. Never allow the main limbs to issue from the same point. Such a tree will be weak and very apt to break down when fruiting begins and the danger increases as the tree grows older. The selected limbs should be pruned back from one-third to one-half of their length. The central leader should be left from five to eight inches longer than the others.

Third Year.—Choose from two to three limbs which have formed on each branch of the frame and remove

HIGH HEADED TREES.—VERY HIGH TRUNK WITH BUNCH OF LIMBS AT THE TOP.
[Courtesy of Horticultural Department.]

[Courtesy of the Horticultural Department.]
"FOUR OR FIVE WELL PLACED LIMBS SHOULD BE SELECTED TO FORM THE FRAMEWORK OF THE TREE."

all others. Cut back about the same as the second year. One-third to one-half is sufficient. All undesirable limbs such as crossing, crowding and broken ones should be removed.

Following Years.—Keep the center properly thinned to admit plenty of air and sun. All diseased, crossing, crowding, broken and unnecessary limbs must be removed, keeping in mind that pruning should be done lightly and regularly. Winter pruning induces wood growth, while heavy pruning produces water sprouts. Summer pruning tends to produce fruit. All wounds should be carefully made and immediately covered with lead to prevent decay. Regular and correct pruning will prevent large wounds. The necessary pruning tools for the young orchard are not expensive and few are required.

ALBERTA

By M. W. Evans, '06

IN MAY, 1908, the writer spent a week's vacation in Alberta. Any portion of Alberta is new; in that part which I visited, agricultural development was so new that hardly more than five per cent of the prairie sod had ever been turned by a plow.

The province of Alberta has an average width from west to east of two hundred and fifty miles, and it extends from the United States northward for a distance of five hundred miles. It is bounded on the east by Saskatchewan, a province having the same shape and size, a similar topography and a somewhat similar climate to Alberta. On the west it is bounded by British Columbia, which, with its great mountains, magnificent forests, and with a climate influenced by the Pacific Ocean, is quite dissimilar to Alberta.

The southern portion of Alberta is a rolling, treeless prairie, which has been used as a stock range for a considerable number of years. At present, portions are being converted into wheat farms. About thirty or forty miles north of Calgary, the appearance of the country contiguous to the railroad changes. The rolling prairie becomes more hilly. The soil changes from a light brown loam to a black soil that increases in depth as one travels northward or westward toward the mountains. At Lacombe, a railroad town about forty miles south of Edmonton, I bored with a soil augur down to a depth of eighteen inches in rich black loam, and was told that in many places this black surface soil extends down to a depth of three feet. The hills about are covered with a growth of willow and poplar. Along the streams there is in many places a quite dense growth of a northern species of spruce.

Eastward from the main line of the Calgary and Edmonton railroad the land becomes less hilly, and the willows and poplar are found in small groves dotted here and there over the rolling prairie. The surface soil also diminishes somewhat in depth as one goes east. All through this part of Alberta there are great numbers of

A SCENE IN ALBERTA.

small ponds and lakes, most of them with no inlet or outlet, generally situated in the bottom of depressions that have evidently been formed by glacial action. Although there are great numbers of these ponds and lakes, there is comparatively little swamp land.

From Lacombe I traveled eastward over a new branch line of the railroad that had been in use for about eighteen months. The new town at its terminus, standing where there was no house at all ten years ago and where only a few cattlemen and hunters came through, now has a population of two thousand or more people, and serves as a distributing point for settlers for seventy-five or one hundred miles to the East.

There is a peculiar interest attached to a country so new, and so far to the north. Scattered here and there over the prairie one can still find numerous skulls, and frequently some of the other bones of buffalo. Occasionally in driving over the prairie one would cross an old buffalo path, which usually leads to some watering place or salt lick. These paths are about ten inches wide and are tramped down evenly about three or four inches below the surface of the soil. On nearly every pond there were wild ducks breeding. Hawks and owls are abundant, and several other species of the larger birds, as curlew and prairie chicken are not uncommon.

In that portion of Alberta the even-numbered sections of land are acquired by homesteading. Most of the homesteads about the terminus of the new railroad had been taken three or four years earlier. The odd-numbered sections of land are chiefly railroad, school, or Hudson Bay Company land; most of the odd sections are still unfenced and form a part of the open range.

The homesteaders are of many different nationalities. Americans and people from northern Europe predominate. Although there are many women and children living in Alberta, even at a considerable distance from the railroads, yet perhaps fully one-third of the houses that I saw, located twenty miles or so from the railroad, were one room shacks, with but a single inhabitant. One of these homesteader's cabin at which a companion and myself stopped, was about twelve feet square. It was rough boarded, with no plaster or paper inside. In one corner was a small cupboard; nearby, a table, made of a wide board nailed on four small poplar posts. On the other side of the cupboard was a stove, and in the further corner a bedstead made of two long

poles supported by four posts and held together by a cross piece at the head and foot. Most of the other side of the room was occupied by a bin of wheat. The remainder of the furniture consisted chiefly of two chairs. The householder insisted on entertaining us at dinner. The chairs served as seats for the two guests, while the host improvised a seat for himself at the table by pressing into service a tin wash boiler. Tucked under the rafters were several volumes by Dickens and other English authors. The young man homesteading this claim was formerly cashier in a London bank. He had been living alone on his homestead most of the time for the past two years, over one-half a mile from the nearest neighbor, who was situated much the same as himself.

The summer days are considerably longer than in any part of the United States. On May twentieth one could see fairly well until ten o'clock, and it did not become entirely dark until half an hour later. By June twentieth it is possible to read without a light until about eleven o'clock.

One evening, at half past ten, I was out on the road or trail twenty-two miles away from the railroad. As I wished to take the train next morning at seven o'clock, it was necessary for me to drive to the station during the night. I was without any company except the faintly glowing northern lights and a lone coyote yelping out on the prairie. I did not know the road but did know the general direction which I wished to travel. There was no moon, but the stars were shining brightly. The sun did not go far enough below the horizon for the last blush of sunset to entirely disappear. All night a faint glow was visible, moving gradually from the northwest to the north and then gradually becoming brighter as it moved farther toward the northeast and the time for sunrise approached. By watching the north star and this faint reflection from the sun I was able to choose the proper trails to follow fairly well, and by six o'clock on the following morning found that I had missed my destination by only about one mile.

There is something fascinating in the tales told of the winters in the North, with the short days and the long nights. Northern lights can be seen at almost any time of the year, but it is in winter that they become most brilliant. Almost any bright winter day mirages may be seen at some time. Occasionally a house appears in the distance where no house had stood before. Sometimes a portion of the landscape appears out at the horizon, separated from the earth by blue sky and resembling a forested island out in the distant ocean. The causes for these phenomena are fairly well understood, and often it is possible to tell what causes any particular mirage.

It seems strange that the provinces of western Canada, situated so near our own western states, have lain undeveloped and almost unknown for so long a time. It will not be many years, however, before what was an open prairie a short time ago, will have been converted into a great agricultural region.

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CARE OF THE EYES

(CONTINUED)

By George M. Gould, M. D.

XIII. "AMBLYOPIA," OR POOR VISION IN ONE OR BOTH EYES

There are several ways of finding out whether your eyes need spectacles, or not. One way is to discover whether you have a headache or not. If you have a headache, you will probably know it!—although some have it so much they think it is "natural," and incurable. Correct glasses, correctly worn, will cure $\frac{99}{100}$ of headaches. If you have sickheadache or "migraine," you need spectacles, because in no other way can it be cured. If there are persisting or repeated attacks of "biliousness," "no appetite," "vomiting," "indigestion," "dyspepsia," constipation, etc., they are pretty surely due to the eyes. If "nervous troubles" are bothering, "St. Vitus Dance," jerkings, "nervousness," "neuralgia," epilepsy, depression (or "blues"), sleeplessness, "nervous prostration," "breaking-downs," dread of insanity, and many other such morbid feelings or habits, they are also very often due to bad eyes, and may be cured by glasses. If there is "bad health," ill-defined and vague, recurring several times, and with a harder climb up each time, it would be well to look carefully after the eyes. In all of these cases, strange as it may seem, the eyes are not suspected. There may be no pain or even discomfort in them, no inflammation, nothing unusual in their appearance, and one may believe he has perfect vision. Indeed when the eye-difficulties and dangers of eyestrain are felt in other parts, the head, bowels, or mind, the eyes seem most well. When the eyes are hurt badly and there is disease in them or poor vision, then the rest of the head and body are usually free.

But the most ignored fact is that there may be poor vision in one or both eyes, and still you may believe you have the best vision. Most everybody has a mistaken belief in their "good eyes." I have had many patients with only one-half, or even with only one-quarter vision, even with one-blind or disused eye, and yet they were great braggers about their "splendid eyesight." It is a foolish and expensvie superstition.

Because, if either eye has even a slight dimness of visual acuteness, it is a most serious affair. The trouble is to find out for yourself if you have such weak sight. In a rough way you may learn if it is so—by pinning some large letters upon the wall, of a size you can just read from across the room. Then cover first one eye, then the other, and see if you can see the letters with equal sharpness with each eye. If both eyes are equally good, (or bad) learn if several friends can see them better, or farther away, than you. If so, you have greater need of the oculist. Any physician, or even any optician, will make the test for you, and tell you if you have "amblyopia."

If you have "amblyopia," or poor vision, in either eye alone, it is probably due to the long-neglected need of good spectacles. Sometimes it may be due to diseases of the eyes themselves, retinitis, iritis, glaucoma, cataract, etc., or to "Bright's Disease," etc., but in any case you should call upon the physician-oculist without delay, and ask him just why you don't see well, with one, or with both eyes. One eye "losing vision" is a very bad sign.

The Cornell Countryman

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FEBRUARY, 1910

Farmers' Week

February again brings Farmers' Week to this college. During the week of Feb. 7, some 2500 people will visit us. We bid these visitors welcome. You came in former years to look us over, to see if the money which you and other tax payers have put into this college is being put to good use. We believe that you also came to catch the enthusiasm which prevails here and which is intensified on this occasion by the presence of so many interested and practical men.

These two ideas were the original excuses for Farmers' Week, but now they are being rapidly cemented into one main purpose, viz.,to get information. The old doubt as to the practicability of a college to train young men and women in farming, is fast disappearing. The graduates of this college have gone home and made good, have beaten the old style farmer at his own game and thus succeeded in arousing a general desire throughout the farming sections of the state for more knowledge.

And so it is that one of the original purposes of Farmers' Week, that of a personal and critical inspection of this, your institution, is fast disappearing. So also is the novelty of, and consequent enthusiasm over, a well equipped college, devoted entirely to agriculture becoming a thing of the past. We believe you have come here this year for information.

It is because of this evolution of the purpose of Farmers' Week that the college activities on this occasion are somewhat altered. It was the former policy to hold classes regularly; to have the visitors see us at work in classroom and laboratory; and to a large extent this policy is being continued. But a conflicting idea has had its influence. With the coming of such numbers of practical men, the question has arisen, "Why cannot the student get closer in touch with the problems of the farm, by meeting these farmers and associating with them for a few days by making arrangements for their entertainment, by talking with them and with them attending the numerous lectures and demonstrations?"

There is a strong under current of sentiment which says, "He can." And as a result, the regular classes for the week are largely abolished. The instructing staff is thus given a better chance to exchange information with the visitors, to give lectures and conduct open discussions. The students are commissioned to assist the visitors and to become acquainted with them and their viewpoints.

This is the ideal of the 1910 Farmers' Week, the ideal of the exchange of information between practice and

theory. It must work toward the progress of scientific knowledge and the advancement of agricultural practice.

Farewell

Before the next issue of the COUNTRYMAN can come out the Short Course men will have left us. Consequently the COUNTRYMAN takes this opportunity to say farewell to them.

You have been here a short three months, and in that time the faculty have tried to give you information which will be of daily use to you; see that you use it for "Knowledge without application is valueless." You may have learned something here that but very few people, if any, in your community ever knew before. Remember that, if you have that knowledge, it is not because you are so much brighter or more intellectual than your neighbors, but because you have had a better chance. Remember this and act accordingly. In this short time you have met many new people, you have intimately associated with others in your course; in this contact you must have been brought face to face with many of the human traits and peculiarities which go to make up character; you must have learned to admire some of these and to despise others. Be careful that you have discerned correctly; and then be sure to apply the wisdom gained constantly to your own personality.

You are going to be watched by all who know you, they want to know just what agricultural education will do for a person. Perhaps they may have a boy or girl who in a few years may want to take an agricultural course. Let them see that you have learned something worth while and that you are a bigger man, or more competent woman, for having been here. Know at all times that it is up to you to make good. Your success will be greater or your failure more marked for having been here.

With these few facts, whose importance we have come to appreciate in four years of such life as you have had this winter, we would say, Farewell. May full measure of happiness and success be yours.

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GENERAL AGRICULTURAL NEWS

Probably the most comprehensive collection of agricultural statistics of New York state ever published is included in Bulletin No. 9 of the State Department of Agriculture.

In discussing the great possibilities of agriculture in this state the report says that in spite of the fact that much has been said about abandoned farms and decrease of interest in New York agriculture, the statistics show that some of the most important lines of agriculture have shown marked improvement in recent years and this is very noticeable in reference to certain of principal agricultural counties. It is found that New York leads all other states in the value of hay, dairy products, potatoes, nursery products, buckwheat, hops and several other important crops. Only three states exceed New York in the total value of agricultural products; these are Iowa, Illinois and Ohio. New York excels these three when a comparison is made on output per acre of farm land. As to the value of farm buildings New York stands first with an investment of $337,000,000, or about one-third of the total value of agricultural property in the state and the figures also show that we spend more money for farm labor than any other state. New York has sixteen counties, each of which produces more than four million dollars worth of products yearly, a larger number of counties reporting such gigantic productions than is found in any other state, while five counties in this state exceed all counties in the United States in the number of dairy cows; these are St. Lawrence, Delaware, Oneida, Jefferson and Cattargus.

The bulletin contains a statement upon the soils of New York in which it is shown that these soils are strong and fertile, and where they have been misused by continuous cropping and improper management, productivity can be rapidly restored. Tables are included to show the rainfall at different points in the state, temperatures, dates of killing frosts and other valuable climatological data.

The third Annual Convention of the American Society of Agricultural Engineers was held at the Iowa State College, December 28 and 29 last. That Agricultural Engineering has become a profession, and that the Society has undertaken a long needed work and entered a hitherto neglected field becomes more and more apparent as the society grows older and with precaution and wise judgment begins to gnaw at the problems confronting the farmer, manufacturer and teacher relative to the mechanical side of rural life. The papers presented at the sessions gave much encouragement showing conclusively that the efforts of the society are beginning to realize success in the many purposes for which it was formed. Discussions on such subjects as "Concrete Construction" and "Gas Engines for the Farm" proved interesting, as well as talks on farm implements and methods of experimental work. A paper recommending the standardization of farm machinery by the society, led to a lively discussion in which the manufacturers strongly advised that such steps be taken, claiming that the result would be the guidance of the farmer in purchasing implements and that a higher quality and efficiency would result, with benefit to maker and user. On the whole the Convention was a complete success and much good should come of it.

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A demand for tobacco extract has lately developed in Germany. Small supplies of the American extract have been sent to many of the large nursery gardens and have given what are described as "astonishing results." Plant pests of various species which work both above and under the soil have been successfully combated with a solution of 1 to 400 parts water, the dose varying according to the nature of the plants treated. A still greater demand may yet be created among the vineyard owners whose vines have been suffering without known remedy from "sauerwurm." which is a vineyard moth related to that known in United

States as the grape berry moth concerning which a pamphlet was published in 1904 at Cornell University by the late Prof. Slingerland. Various methods had been tried before the tobacco extract came into use, the remedy in most cases proving to be only moderately effective, and damaged the quality of the wine almost as badly as the worms themselves.

* * *

For the purpose of holding a national agricultural and industrial exposition, which shall be in the nature of a permanent exhibit, a company with a $1,000,000 capital has been formed. The exposition while not intended for a world's fair will present all America's resources and handicraft before the people, not only in the form of statistics but also in a permanent, real way. Every phase of agricultural, industrial and educational importance is to be represented and it is hoped that from this summary of the country's advance in Agriculture, to exploit our resources and draw many useful lessons for the future.

Thirty-eight Governors have personally accepted the position of vice-president for their states, each showing great interest and enthusiasm in the subject and offering their personal assistance in whatever way possible. A number of western and south-western cities are offering inducements to have the exposition locate with them. The desire of those in charge of the work, however, is to secure a location as near the center of trade and population as possible and construction will commence immediately upon the selection of a suitable place. The exposition has the endorsement of many noted educational institutions, scientific societies and the American Federation of Labor.

An enormous development of the sugar industry is expected in the Philippines. This is due to the relief of strained conditions which have prevailed there, as well as to the introduction of modern methods for cultivation and irrigation. The introduction of better varieties of sugar cane has also improved the yield considerably each year.

* * *

The increase of $20,000,000 in flower trade in France is said to be due largely to the extension of parcel-post privileges to the shipment of cut flowers. Such a parcels post system in this country would cause an even greater increase in the mailing of all classes of goods. It is figured that there are some 40,000 mail wagons running in the United States, each with less than one-quarter of a load. If a fair rate of postage was charged for mail packages, these wagons would be filled, and the loss on R. F. D. amounting to about 28,000,000 would be changed to profit.

* * *

The annual wool review and sheep census for 1909 has been issued by Secretary Winthrop Marvin of the National Wool Grower's Association.

The number of sheep fit for shearing is placed at 42,293,205. This is an increase of 1,981,657 over the 1908 figures. The increase is due chiefly to additions to the estimated stock of Montana, Wyoming, Idaho and New Mexico.

Montana has the largest flock of any state in the Union, a round five million. The fleeces averaged seven pounds each, the clip being 35,000,000 pounds. At 68 cents a pound this brought in 9,044,000 dollars during the year, the price of wool for 1908 was 51 cents.

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CAMPUS NOTES

The Founder's Day address on January 11th, was delivered by W. C. Brown, President of the New York Central Railroad. Mr. Brown chose as his subject, "Agriculture and the Nation," which he treated in an interesting and exceedingly convincing manner. The address was very enthusiastically received by an audience of faculty and students which filled the armory. President Brown started his address by saying, "My Alma Mater was a backwoods school house and the only college yell I ever knew was the yell caused by the master's flogging, which yell I gave quite regularly." He emphasized the fact that our population is increasing very rapidly while our production of food products is not keeping pace, and also that our yearly exports are falling off at an alarming rate, which means, if radical improvement in our farming is not effected, that we will soon become an importing nation. To offset the crisis of not having enough food to feed our own people President Brown said that we must bring our production per acre up to the standard of other nations. To accomplish this we have got to educate the people in proper methods of farming which means more agricultural colleges, experiment stations and demonstrational farms and exhibits. In speaking of the appropriations desired from the State by this College, President Brown said, "For half a million dollars spent by this State in enlarging the New York State College of Agriculture I will guarantee a return of one hundred million dollars." In closing he said that the New York Central Railroad had voted a sum of money to buy up a few abandoned farms in different parts of the State and that he was going to call on this College for men to run these farms. When the land had been brought back to productivity again they would sell the farms and buy others in different counties. "This is not a philanthropic move in any sense of the word," said President Brown, "but merely self-preservation."

* * *

The January Assembly was held Thursday evening, January 13th. The program opened with Alma Mater, followed by a selection by the Mandolin Club and this by a selection from the Glee Club; the Glee Club quartette responding with an encore. In the first part of his address Dean Webber spoke of the large appropriation of $650,000 which we were asking from the State Legislature this winter and urged everyone to do what they could in a quiet manner to get the people of the State, and through them their representatives, interested in this matter which means so much to the future of our College. The Dean requested that the regulation that there be no smoking in the buildings of the College be strictly lived up to and that there should be no unnecessary noise in the corridors.

The rest of the time Dean Webber devoted to telling of some of his experiences in Florida. Particularly interesting and very much enlivened by the Dean's humor were the accounts of cave explorations made by Dr. Webber and two of his friends. All

those present voted the Dean a capital story teller.

Cheese and crackers were furnished as refreshments during the social hour. At this assembly the old custom of gathering around the piano and singing was revived.

* * *

A meeting of the Agricultural Association was held Friday evening, January 14th. The meeting was called to order at 7:30 and the first part was devoted to the transaction of business. Next came the election of officers for the second term. Following are the officers elected: President H. N. Kutschbach, 10; vice-president C. F. Ribsam, '11; secretary, Miss Grace L. Bennet, '11; treasurer, I. C. Jagger, '11; member of Executive Committee, A. L. Thompson, '11. Following the election of officers, Professor Craig gave a short talk concerning the purchase of a boat for the crews of this College and emphasized the great advantage which this would be towards turning out winning crews. Professor Craig said that if the students would raise three hundred dollars he would guarantee the remainder from the faculty and alumni. A committee was appointed to consider this proposition. The remainder of the evening was devoted to an address by John R. Boardman, Chairman of the Committee on County Work of the Young Men's Christian Association. Mr. Boardman dealt with the work of the Association in rural communities, laying especial emphasis on "The Duties of the College Man in the Country." At the conclusion of the meeting the audience adjourned to the corridors where refreshments, consisting of doughnuts and coffee, were furnished by the Junior class of the College.

* * *

Dean L. H. Bailey who is this year absent on sabbatical leave came east from Los Angeles to attend the meeting of the New York State Agricultural Society held at Albany, beginning January 18th. Dean Bailey arrived in Ithaca, Sunday, January 16th, remaining until Tuesday morning.

Dean Bailey addressed the students of this College, Friday evening, January 21st. The Dean was welcomed back by a tremendously enthusiastic and long continued ovation from faculty and students. Dr. Webber's announcement that Dean Bailey would resume the Directorship next year called forth another, decidedly joyful, burst of applause. An extract of the Dean's address is printed in another part of this issue.

* * *

Dean Webber during the Christmas vacation went to Illinois, Iowa, Nebraska, Minnesota and Wisconsin, visiting the agricultural institutions in each state, for the purpose of comparing those colleges with ours. The factors which impressed the dean were these. First, Cornell has more long course students than any other except Illinois. The latter is very nearly equal to Cornell in number of long course students but has no short-course students. In the case of the others, none have anywhere near as many long-course students as we have, but Iowa and Minnesota have more short-course men. Second, in all the institutions visited, there was more floor space per student but we have a larger faculty than any other. Therefore, it can be said to all the students in this college that they could make the same trip and still be proud of having Cornell as their Alma Mater. The last important factor which impressed itself on Dean Webber was the fact that the students in colleges connected with universities in much larger percentages go to purely agricultural work.

* * *

The Poultry Association at their regular meeting of January 10, were fortunate in having Mr. Fred Van Patten of Syracuse with them. He gave a very interesting talk on the subject "From the Hatch to the Hatchet," illustrated by 60 lantern slides taken especially for this occasion. In the course of his talk he described his own successful poultry plant including the new type of "Round House" and

many unique and original devices.

The regular program was followed by the usual social hour with refreshments, during which, the new pin adopted by the Association was shown, the neat design being admired by all who saw it. The attendance was 109, most of whom were Association members.

* * *

In the first game played this season the basketball team from the College of Agriculture defeated the team from the Veterinary College by the score of 14-11.

* * *

The first competition for the Eastman prize of one hundred dollars for speaking was held January 10th. The judges were Professors Stone, Fippin, and Mann. The following twelve were chosen: P. H. Elwood, Miss E. Genung, M. B. Goff, H. B. Knapp, H. N. Kutschbach, S. L. Lewis, E. M. Tuttle, H. B. Rogers, R. D. Anthony, E. M. Johnston, V. J. Frost, N. R. Peet.

The second competition was held January 15th, from which six men were selected to speak in the final competition to he held during Farmers' Week. Following men were selected, Professors Stone, Warren and Fippin acting as judges: H. B. Rogers, S. L. Lewis, M. B. Goff, N. R. Peet, V. J. Frost, E. M. Tuttle.

* * *

Professor A. W. Gilbert was in Lansing, Michigan, during the Christmas vacation.

* * *

During Farmer's Week a Potato Show will be given and it is expected that large numbers of potatoes grown by the farmers of this State will be exhibited. Over a hundred dollars worth of potato machinery has been presented by manufacturers of this machinery to be given as prizes. The Corn Show last year was a great success but it is hoped to make the Potato Show better and bigger than that exhibit. The potatoes will be exhibited in the Farm Crop laboratory. The arrangements are almost wholly in the hands of the students in Farm Crops No. 1. The following chairmen were elected the remainer of the class making up the committees: General chairman, F. N. Darling, '10; chairman of Arrangements committee, A. T. Thompson, '11; chairman of Exhibition committee, W. H. Rothenberger; chairman of Judging committee, H. W. Humphrey; chairman of Educational committee, W. C. Funk; chairman of Potato Products committee, Miss Clara Browning.

* * *

The Thirty-Third Annual Convention of the New York State Dairymen's Association held at Watertown, December 14–17 in the State Armory building was formerly opened Tuesday evening, January 14th, Professor H. H. Wing, president of the Association presiding. Among the addresses given we note the following: Professor H. E. Ross on "Cow Testing Associations;" Mr. A. R. Eastman, founder of the Eastman Stage, on the "Future of Dairy Farming;" an address by Commissioner Pearson and a paper by E. H. Marshall of Ithaca, on "The Dairy Industry." Hoards Dairyman in commenting on the Convention said, "The thirty-third annual convention, presided over ably by Prof. H. H. Wing, was one of the most successful and helpful meetings in its history."

* * *

The First Annual Banquet of the New York State Fruit Grower's Association was held Thursday evening, January 8, 1910, at The Duffy-McInnerney Co., Rochester, N. Y. On the program we noted the following toasts: "Agricultural Opportunity in the State of New York," Hon. Raymond A. Pearson; "The Scope of Agricultural Education," Dr. H. J. Webber; "The Country and the City," Dr. Jacob Gould Schurman.

In the Students Fruit Judging Contest T. Bradlee, '11, won first prize; R. L. Williams, Sp., won second prize, and K. B. Lewis, '10, third prize. The prizes were $5.00, $3.00 and $1.00.

On Saturday evening, January 1, Prof. and Mrs. Craig entertained the members of the Craig Club at their home on East Avenue. A most enjoyable evening was passed and the occasion will not soon be forgotten by those present.

We are sorry to note that Mr. Munn's efforts to start a basket ball team have not met with much success. Good basket ball material is very scarce in the Club this year.

The class picture has been taken, pins are ordered, and we are making the forcing house resound with our class cheers on Club nights.

* * *

FORMER STUDENTS

GEORGE C. WATSON

George C. Watson entered Cornell the fall of 1877 with the class of '81 which numbered about 135, graduated in 1881 and received the degree of B. Agr. and immediately returned to his father's farm where he was engaged in practical work for ten years. In 1891, he returned to Cornell University as Agriculturist in the Experiment Station. A considerable part of his time, however, was given to instructional work. He received his Master's degree in 1893. In the fall of 1895, he was elected Professor of Agriculture and Agriculturist in the Experiment Station at the Pennsylvania State College, and immediately took up the work at that institution.

During the ten years of practical work immediately following graduation, he took an active part in the Grange work and realized that the Grange was one of the great educational institutions of the country. Soon after taking up the work in Pennsylvania, he originated and developed the Correspondence Courses in Agriculture that brought the farm boys in close touch with the Agricultural College, particularly those that were connected with the Grange. The popularity of the Correspondence Courses soon caused them to be recognized as one of the departments of the College.

During the time that he was engaged in College and Experiment Station work, a number of bulletins were prepared by him and published by the Cornell University and the Pennsylvania State College Experiment Station and the Department of Agriculture at Washington. In 1901, he wrote "Farm Poultry" which was published in the Rural Science Series.

In 1907, he resigned his position at Pennsylvania State College and accepted a position as General Manager of Tully Farms at Tully, N. Y. These farms comprise over 3000 acres of land. The chief interest in the production of certified milk for New York and Syracuse markets. While a part of the farm interests is devoted to diversified agriculture, the major portion is centered in a dairy of over 300 cows.

'96, B.S.A., '97, M.S.A.—Leroy Anderson of the Educational Department of the University of California, visited the college during the week preceeding the Christmas vacation. Mr. Anderson is in the East visiting the Agricultural schools and colleges, especially the secondary schools.

'02, Sp.—Harrison S. Williams, who is now herdsman for Dr. J. C. Sharp, Blairstown, N. J., visited the college recently. Mr. Williams has charge of a herd of seventy-seven Holsteins from

which he is producing clean milk for the New York market. This dairy recently secured a score of 99% from the New York City Board of Health.

'02, B.S. A.—G. W. Hosford has resigned his position as assistant pomologist under G. Harold Powell of the U. S. Department of Agriculture to become manager of the San Dimas Lemon Association at San Dimas, California. This association handles on a co-operative basis the lemons of about 300 growers. During the past year their output was about 700 cars. The Association is a member of the California Fruit Growers Exchange.

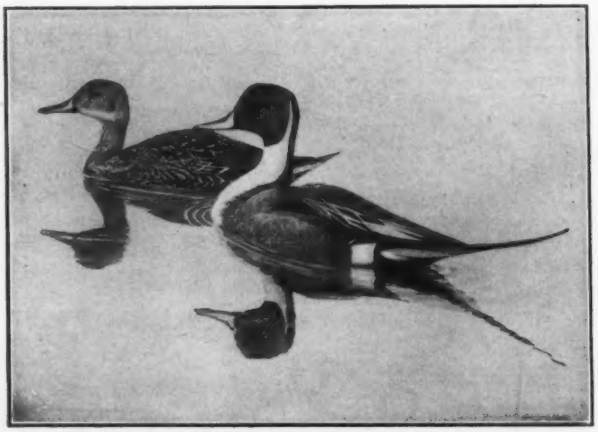
'06, Sp.—R. Van Doren was married June 9th, 1909, to Miss Ella Louise Frary of Pulaski, N. Y. They are at home with Mr. Van Doren's parents at Three Mile Bay, where Mr. Van Doren is managing his father's farm.

'06, B.S.A.—H. F. Button is Director of Manassas Agricultural High School, Manassas, Va., where he is having great success not only in the school but in conducting a fine series of farmer's institutes and other extension features.

'07, B.S.A.—Horace F. Prince has gone to Clear Lake, Idaho, and will supervise there the planting of large orchards for the Clear Lake Orchard Company of which he is one of the directors and Secretary-Treasurer. About 400 acres of land will be set with peach and apple trees. This ranch is located in the Snake River Canyon which lies about the middle of the well known Twin Falls district in southern Idaho. In addition to this, Mr. Prince still retains his Grand Junction, Colo., fruit ranch. We wish Prince the same success in this venture that has attended all his efforts in the past.

'09, Sp.—Miss W. W. Aherne while teaching in a rural school in Davenport, Delaware, finds time to put into practice some of Mrs. Comstock's nature study ideas. Miss Aherne expects to be at this college for Farmers' Week.

'09, B.S.A.—E. L. D. Seymour, Editor-in-chief of the COUNTRYMAN, 07,–'08, 08–'09, recently wrote to us from Augusta, Me.



Reproduced from a painting by L. A. Fuertes.
PIN-TAIL DUCKS.

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Errol Coffin

BEANS ARE NOT THE ONLY CROP RAISED. (See page 202).
There are 125 miles of underdrains on this farm.